L6: Entry 1 of 4   File: USPT   Nov 9, 1999

US-PAT-NO: 5982317
DOCUMENT-IDENTIFIER: US 5982317 A

TITLE: Oversampled digital-to-analog converter based on nonlinear separation and linear
recombination

DATE-ISSUED: November 9, 1999

US-CL-ISSUED: 341/143; 341/144
US-CL-CURRENT: 341/143; 341/144

INT-CL-ISSUED: [06] H03 M 3/00

L6: Entry 2 of 4   File: USPT   Apr 30, 1991

US-PAT-NO: 5012519
DOCUMENT-IDENTIFIER: US 5012519 A

TITLE: Noise reduction system

DATE-ISSUED: April 30, 1991

US-CL-ISSUED: 381/47; 381/46
US-CL-CURRENT: 704/226; 704/225

INT-CL-ISSUED: [05] G10 L 5/00

L6: Entry 3 of 4   File: DWPI   Oct 29, 1998

DERWENT-ACC-NO: 1998-584001
ABSTRACTED-PUB-NO: US 5982317A
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TITLE: Digital-to-analogue converter system - separates multibit digital input signal into main
signal and compensation signal, with mismatch shaping DAC receiving compensation signal and
providing analogue compensation signal

INT-CL (IPC): H03 M 1/08, H03 M 3/00, H03 M 3/02
Derwent-CL (DC): U21
EPI Codes: U21-A04;

L6: Entry 4 of 4   File: DWPI   Apr 30, 1991

DERWENT-ACC-NO: 1991-140543
ABSTRACTED-PUB-NO: US 5012519A
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TITLE: Noise reduction for speech recognition system - has voice operated switch detect noise-
only input to gate background noise estimator and residual noise estimater

INT-CL (IPC): G10 L 5/00
Derwent-CL (DC): P86, W04
EPI Codes: W04-G; W04-V01;

US-CL-ISSUED: 704/225; 381/94.3, 704/226
US-CL-CURRENT: 704/225; 381/94.3, 704/226

INT-CL-ISSUED: [07] G10 L 21/02

US-PAT-NO: 5982317
DOCUMENT-IDENTIFIER: US 5982317 A

TITLE: Oversampled digital-to-analog converter based on nonlinear separation and linear recombination

DATE-ISSUED: November 9, 1999

US-CL-ISSUED: 341/143; 341/144
US-CL-CURRENT: 341/143; 341/144

INT-CL-ISSUED: [06] H03 M 3/00

US-PAT-NO: 5903819
DOCUMENT-IDENTIFIER: US 5903819 A
** See image for Certificate of Correction **

TITLE: Noise suppressor circuit and associated method for suppressing periodic interference component portions of a communication signal

DATE-ISSUED: May 11, 1999

US-CL-ISSUED: 455/63; 455/570, 455/297, 375/285, 375/346
US-CL-CURRENT: 455/63.1; 375/285, 375/346, 455/297, 455/570

INT-CL-ISSUED: [06] H04 B 15/00

US-PAT-NO: 5563944
DOCUMENT-IDENTIFIER: US 5563944 A

TITLE: Echo canceller with adaptive suppression of residual echo level

DATE-ISSUED: October 8, 1996

US-CL-ISSUED: 379/410; 379/406, 370/32.1
US-CL-CURRENT: 379/406.04; 370/289

INT-CL-ISSUED: [06] H04 B 3/20

US-PAT-NO: 5550924
DOCUMENT-IDENTIFIER: US 5550924 A
** See image for Certificate of Correction **

TITLE: Reduction of background noise for speech enhancement

L12: Entry 1 of 31   File: USPT   Oct 26, 2004

US-PAT-NO: 6810273
DOCUMENT-IDENTIFIER: US 6810273 B1

TITLE: Noise suppression

DATE-ISSUED: October 26, 2004

US-CL-ISSUED: 455/570; 455/63.1, 455/296, 370/286, 379/406.01
US-CL-CURRENT: 455/570; 370/286, 379/406.01, 455/296, 455/63.1

INT-CL-ISSUED: [07] H04 B 1/38, H04 M 1/00, H04 M 9/08

L12: Entry 2 of 31   File: USPT   Oct 21, 2003

US-PAT-NO: 6636604
DOCUMENT-IDENTIFIER: US 6636604 B1

TITLE: Method and device for suppressing echo in a hands free device such as a telephone

DATE-ISSUED: October 21, 2003

US-CL-ISSUED: 379/406.01; 379/406.02, 379/406.05, 379/406.06, 379/406.07, 379/406.08, 379/406.1

US-CL-CURRENT: 379/406.01; 379/406.02, 379/406.05, 379/406.06, 379/406.07, 379/406.08, 379/406.1

INT-CL-ISSUED: [07] H04 M 9/08

L12: Entry 3 of 31   File: USPT   Jul 8, 2003

US-PAT-NO: 6591234
DOCUMENT-IDENTIFIER: US 6591234 B1
** See image for Certificate of Correction **

TITLE: Method and apparatus for adaptively suppressing noise

DATE-ISSUED: July 8, 2003

US-CL-ISSUED: 704/225; 704/226, 704/228, 704/233, 704/268
US-CL-CURRENT: 704/225; 704/226, 704/228, 704/233, 704/268

INT-CL-ISSUED: [07] G10 L 21/02

L12: Entry 4 of 31   File: USPT   Jul 2, 2002

US-PAT-NO: 6415253
DOCUMENT-IDENTIFIER: US 6415253 B1

TITLE: Method and apparatus for enhancing noise-corrupted speech

DATE-ISSUED: July 2, 2002

US-CL-ISSUED: 704/210; 704/226, 381/94.2
US-CL-CURRENT: <u>704/210</u>; <u>381/94.2</u>, <u>704/226</u>

INT-CL-ISSUED: [07] <u>G10</u> <u>L</u> <u>21/02</u>

US-PAT-NO: 6163608
DOCUMENT-IDENTIFIER: US 6163608 A

TITLE: Methods and apparatus for providing comfort noise in communications systems

DATE-ISSUED: December 19, 2000

US-CL-ISSUED: 379/410; 379/407
US-CL-CURRENT: <u>379/406.01</u>; <u>379/406.04</u>, <u>379/406.09</u>

INT-CL-ISSUED: [07] <u>H04</u> <u>M</u> <u>9/08</u>, <u>H04</u> <u>M</u> <u>9/00</u>, <u>H04</u> <u>M</u> <u>1/24</u>

US-PAT-NO: 6122610
DOCUMENT-IDENTIFIER: US 6122610 A

TITLE: Noise suppression for low bitrate speech coder

DATE-ISSUED: September 19, 2000

US-CL-ISSUED: 704/226; 704/205, 704/219, 704/220, 381/94.2
US-CL-CURRENT: <u>704/226</u>; <u>381/94.2</u>, <u>704/205</u>, <u>704/219</u>, <u>704/220</u>

INT-CL-ISSUED: [07] <u>G10</u> <u>L</u> <u>11/00</u>, <u>H04</u> <u>B</u> <u>15/00</u>

US-PAT-NO: 6097820
DOCUMENT-IDENTIFIER: US 6097820 A

TITLE: System and method for suppressing noise in digitally represented voice signals

DATE-ISSUED: August 1, 2000

US-CL-ISSUED: 381/94.3; 381/94.2
US-CL-CURRENT: <u>381/94.3</u>; <u>381/94.2</u>

INT-CL-ISSUED: [07] <u>H04</u> <u>B</u> <u>15/00</u>

US-PAT-NO: 6088668
DOCUMENT-IDENTIFIER: US 6088668 A

TITLE: Noise suppressor having weighted gain smoothing

DATE-ISSUED: July 11, 2000

DATE-ISSUED: August 27, 1996

US-CL-ISSUED: 381/94; 381/46, 381/47, 395/2.34, 395/2.35
US-CL-CURRENT: 381/94.3; 704/225, 704/226

INT-CL-ISSUED: [06] H04 B 15/00

US-PAT-NO: 5012519
DOCUMENT-IDENTIFIER: US 5012519 A

TITLE: Noise reduction system

DATE-ISSUED: April 30, 1991

US-CL-ISSUED: 381/47; 381/46
US-CL-CURRENT: 704/226; 704/225

INT-CL-ISSUED: [05] G10 L 5/00

US-PAT-NO: 4630305
DOCUMENT-IDENTIFIER: US 4630305 A

TITLE: Automatic gain selector for a noise suppression system

DATE-ISSUED: December 16, 1986

US-CL-ISSUED: 381/94; 381/68.2
US-CL-CURRENT: 381/94.3; 381/317, 381/320, 704/225, 704/226

INT-CL-ISSUED: [04] H04 B 15/00

US-PAT-NO: 4628529
DOCUMENT-IDENTIFIER: US 4628529 A
** See image for Certificate of Correction **

TITLE: Noise suppression system

DATE-ISSUED: December 9, 1986

US-CL-ISSUED: 381/94; 381/68.2
US-CL-CURRENT: 381/94.3; 381/317, 381/320, 704/225, 704/226

INT-CL-ISSUED: [04] H04 B 15/00

DERWENT-ACC-NO: 2002-680785
ABSTRACTED-PUB-NO: US 6415253B
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TITLE: Noise suppression device for digital cellular phones, filters noise-corrupted signal
based on window size determined from existence or non-existence of speech corresponding to

generated by control signal

INT-CL (IPC): <u>G10</u> <u>L</u> <u>21/02</u>
Derwent-CL (DC): P86, U24 , W01 , W04
EPI Codes: U24-G01C; U24-G03D1; W01-C01C3C; W01-C01D3C; W01-C01D3E; W04-V04A1; W04-V05A;

DERWENT-ACC-NO: 2001-441393
ABSTRACTED-PUB-NO: WO 200137265A
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TITLE: Noise suppression device for a mobile terminal operating in a cellular network

INT-CL (IPC): <u>G10</u> <u>L</u> <u>0/00</u>, <u>G10</u> <u>L</u> <u>21/00</u>, <u>G10</u> <u>L</u> <u>21/02</u>, <u>H04</u> <u>B</u> <u>1/38</u>, <u>H04</u> <u>B</u> <u>15/02</u>, <u>H04</u> <u>M</u> <u>1/00</u>, <u>H04</u> <u>M</u> <u>9/08</u>
Derwent-CL (DC): P86, W01 , W02 , W04
EPI Codes: W01-C01C3; W01-C01C7; W01-C01D3C; W01-C08E; W02-C03C1C; W02-C06; W02-G03B9; W04-V04A1; W04-V05E;

DERWENT-ACC-NO: 2000-601202
ABSTRACTED-PUB-NO: US 6097820A
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TITLE: Noise suppressor for voice communication system, transforms frame of frequency domain audio data back into time domain data, so that transformed frame of data has increased signal to noise ratio

INT-CL (IPC): <u>H04</u> <u>B</u> <u>15/00</u>
Derwent-CL (DC): W01, W04
EPI Codes: W01-C01C3C; W01-C01C7; W04-V04A1; W04-V05E;

DERWENT-ACC-NO: 2000-586899
ABSTRACTED-PUB-NO: WO 200041169A
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TITLE: Noise suppression apparatus for communication system, receives voice sense signal from sensor and sub-band outputs from filter bank, to output multiple short term and long term power estimate signals

INT-CL (IPC): <u>G10</u> <u>L</u> <u>19/00</u>, <u>G10</u> <u>L</u> <u>21/02</u>
Derwent-CL (DC): P86, U22 , U24 , W01 , W04
EPI Codes: U22-G01D; U24-C05B; U24-C05D; W01-C01C3; W01-C01C7; W04-V05E;

DERWENT-ACC-NO: 2000-338817
ABSTRACTED-PUB-NO: US 6122610A
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TITLE: Noise suppression method for use in low bit rate speech coder involves determining noise suppression frequency response based on which input signal current block is shaped

INT-CL (IPC): <u>G10</u> <u>L</u> <u>5/06</u>, <u>G10</u> <u>L</u> <u>7/06</u>, <u>G10</u> <u>L</u> <u>7/08</u>, <u>G10</u> <u>L</u> <u>9/06</u>, <u>G10</u> <u>L</u> <u>9/18</u>, <u>G10</u> <u>L</u> <u>11/00</u>, <u>G10</u> <u>L</u> <u>13/00</u>, <u>G10</u> <u>L</u> <u>15/00</u>, <u>G10</u> <u>L</u> <u>15/20</u>, <u>G10</u> <u>L</u> <u>19/02</u>, <u>G10</u> <u>L</u> <u>21/02</u>, <u>H04</u> <u>B</u> <u>15/00</u>
Derwent-CL (DC): P86, W01 , W02 , W04
EPI Codes: W01-B05A1A; W02-C03C1A; W02-C06; W04-V05; W04-V05E;

DERWENT-ACC-NO: 2000-117014
ABSTRACTED-PUB-NO: US 6088668A

TITLE: Noise suppressor with signal to noise determiner, SNR, channel gain determiner, gain smoother and multiplier, SNR finds signal to noise per channel of input signal

INT-CL (IPC): <u>G09</u> <u>B</u> <u>5/00</u>, <u>G10</u> <u>L</u> <u>3/02</u>, <u>G10</u> <u>L</u> <u>19/02</u>, <u>G10</u> <u>L</u> <u>21/02</u>, <u>H04</u> <u>B</u> <u>1/10</u>, <u>H04</u> <u>B</u> <u>15/00</u>
Derwent-CL (DC): P85, P86 , T01 , U22 , W01 , W04
EPI Codes: T01-J08A2; T01-J18; U22-G05B; W01-C01C3C; W01-C01C7; W04-G03; W04-V05E;

DERWENT-ACC-NO: 1999-478856
ABSTRACTED-PUB-NO: US 6163608A

TITLE: Echo suppression device used in vehicle handsfree telephones

INT-CL (IPC): <u>H04</u> <u>B</u> <u>3/20</u>, <u>H04</u> <u>M</u> <u>0/00</u>, <u>H04</u> <u>M</u> <u>1/24</u>, <u>H04</u> <u>M</u> <u>1/60</u>, <u>H04</u> <u>M</u> <u>5/08</u>, <u>H04</u> <u>M</u> <u>9/00</u>, <u>H04</u> <u>M</u> <u>9/08</u>
Derwent-CL (DC): U22, W01 , W02
EPI Codes: U22-G01D; U22-G05B; W01-C01C3E; W01-C01C7; W01-C01D3B; W01-C01G2; W02-C01C1; W02-C03E2;

DERWENT-ACC-NO: 1999-348241
ABSTRACTED-PUB-NO: DE 19753224A

TITLE: Echo suppressor for loudspeaker telephone

INT-CL (IPC): <u>H03</u> <u>G</u> <u>3/20</u>, <u>H03</u> <u>H</u> <u>21/00</u>, <u>H04</u> <u>B</u> <u>1/40</u>, <u>H04</u> <u>B</u> <u>3/23</u>, <u>H04</u> <u>B</u> <u>17/00</u>, <u>H04</u> <u>M</u> <u>1/60</u>, <u>H04</u> <u>M</u> <u>9/08</u>
Derwent-CL (DC): U22, U24 , U25 , W01
EPI Codes: U22-G01A5; U24-C01; U25-E05A; W01-C01C1B; W01-C01C3E; W01-C01G2;

DERWENT-ACC-NO: 1998-584001
ABSTRACTED-PUB-NO: US 5982317A

TITLE: Digital-to-analogue converter system - separates multibit digital input signal into main signal and compensation signal, with mismatch shaping DAC receiving compensation signal and providing analogue compensation signal

INT-CL (IPC): <u>H03</u> <u>M</u> <u>1/08</u>, <u>H03</u> <u>M</u> <u>3/00</u>, <u>H03</u> <u>M</u> <u>3/02</u>
Derwent-CL (DC): U21
EPI Codes: U21-A04;

DERWENT-ACC-NO: 1997-471088
ABSTRACTED-PUB-NO: US 5903819A

TITLE: Noise suppression of periodic interference in communications signal - estimates time-domain periodic noise components in signal, and subtracts same, achieving noise suppression

without significant signal delay

INT-CL (IPC): <u>G10</u> <u>K</u> <u>11/178</u>, <u>G10</u> <u>L</u> <u>3/02</u>, <u>G10</u> <u>L</u> <u>21/02</u>, <u>H04</u> <u>B</u> <u>15/00</u>
Derwent-CL (DC): P86, W01 , W04
EPI Codes: W01-C01C3C; W01-C01C7; W01-C01D3; W04-V05E; W04-V09;

DERWENT-ACC-NO: 1995-067065
ABSTRACTED-PUB-NO: EP 707763B
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TITLE: Background noise suppression appts. for teleconference system - divides signal into
frames for notch filtering before performing fast Fourier transform and noise estimation

INT-CL (IPC): <u>G10</u> <u>L</u> <u>9/00</u>, <u>G10</u> <u>L</u> <u>13/00</u>, <u>G10</u> <u>L</u> <u>21/02</u>, <u>H03</u> <u>H</u> <u>17/02</u>, <u>H04</u> <u>B</u> <u>1/10</u>, <u>H04</u> <u>B</u> <u>15/00</u>,
<u>H04</u> <u>S</u> <u>1/00</u>
Derwent-CL (DC): P86, T01 , W01 , W02 , W04
EPI Codes: T01-J04B; W01-C01C3; W01-C01G5; W02-F08; W04-V05E;

DERWENT-ACC-NO: 1994-210211
ABSTRACTED-PUB-NO: EP 604948A
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TITLE: Echo canceller for long distance telephone network - has communication state detector
which produces inhibit signal when receive-in signal is greater than send-in signal to prevent
production echo estimation signal

INT-CL (IPC): <u>H04</u> <u>B</u> <u>3/20</u>, <u>H04</u> <u>B</u> <u>3/23</u>
Derwent-CL (DC): W01, W02
EPI Codes: W01-C08E; W02-C01C1B;

DERWENT-ACC-NO: 1991-140543
ABSTRACTED-PUB-NO: US 5012519A
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TITLE: Noise reduction for speech recognition system - has voice operated switch detect noise-
only input to gate background noise estimator and residual noise estimater

INT-CL (IPC): <u>G10</u> <u>L</u> <u>5/00</u>
Derwent-CL (DC): P86, W04
EPI Codes: W04-G; W04-V01;

DERWENT-ACC-NO: 1987-007116
ABSTRACTED-PUB-NO: EP 226613B
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TITLE: Automatic gain selector for noise suppression system - has channel gain controller
producing modification signal with individual gain values for application to channel gain
modifier

INT-CL (IPC): <u>H03</u> <u>G</u> <u>3/34</u>, <u>H04</u> <u>B</u> <u>15/00</u>
Derwent-CL (DC): P86, W02 , W04 , W06
EPI Codes: W02-H;

DERWENT-ACC-NO: 1986-346451 ·
ABSTRACTED-PUB-NO: EP 226613B
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TITLE: Acoustic noise suppression system for speech communication - simulates post processed
speech by multiplying pre-processed energy by modification signal channel gain value

INT-CL (IPC): H03 G 3/34, H04 B 15/00
Derwent-CL (DC): P86, W02 , W04 , W06
EPI Codes: W04-G; W04-Y;

DERWENT-ACC-NO: 1967-04866H
ABSTRACTED-PUB-NO: NL 6810273A
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TITLE: Control of slime in aqueous systems
Derwent-CL (DC): C00
CPI Codes: C02-Z; C05-A02; C05-C03; C10-E02; C10-J02; C12-A01; C12-A02;